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I note the description of one new species, *Anculosa harpethensis* Pilsbry. It is distinguished from *A. subglobosa* Say. by its globular form and the angulation at the base of the columella; "face of columella concave, a projecting angle at union of columellar and basal lips."

MAMMALIA.—The mammals collected by Dr. A. Donaldson Smith during his expedition to Lake Rudolf, Africa, representing 50 genera and 77 species, 7 of which are new, have been described in the Proceedings of the Academy of Natural Science of Philadelphia (pp. 517–546) by Mr. S. N. Rhoads.

EMBRYOLOGY.[1]

Spinning Powers of Certain Eggs.—It is well known that the protoplasm of many one-celled animals may flow out as excessively delicate threads of living matter that exhibit remarkable currents and contractile phenomena. Something similar to these filose "pseudopodia" is met with in certain cells of many-celled animals, as in the pigment cells of the retina, etc. In a recent paper by Gwendolen Foulke Andrews[2] it is claimed that the eggs of star-fish and sea-urchins form very much the same sort of delicate pseudopodial filaments as are produced in those one-celled animals.

These thread-like processes are "spun" out from the protoplasm of the egg in such exceedingly delicate filaments that they have escaped notice and have now been revealed only with good lenses and exceptional optic resources.

From the elevation of the egg's surface that meets the sperm a "*tuft*" of fine threads is spun out; the whole surface of the eggs spins out fine threads to make the egg membrane; the egg spins during cleavage; it spins out the cilia that move the blastula; it spins filaments across the cleavage cavity and from one germ-layer to another in the gastrula; and the polar bodies spin like the rest of the egg.

These threads spun out are flowing material that branches, anastomoses, shows currents and other phenomena very much as do the pseudopodial filaments of such one-celled animals as Gromia.

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[1] Edited by E. A. Andrews, Baltimore, Md., to whom abstracts, reviews and preliminary notes may be sent.

[2] Journal of Morphology. February, 1897, pps. 367–389.

The membrane that is formed after entrance of a sperm is made in the sea-urchin by the following spinning phenomena. In normal eggs of Echinus clear, homogeneous, straight, smooth filaments flow out from the egg, very close together, and all attain the same length about the same time. These filaments then seem to fuse at the tips to make a ceiling-like film that grows thicker. The space between the filaments is then filled in—in some undetermined way—and thus the membrane is completed.

In abnormal eggs the spinning is irregular and more in the form of tufts and brushes that are more readily observed.

In the star-fish after such a membrane is formed the egg sends out a tuft of threads from the place where the polar bodies were formed and then ceases to spin ; soon the general surface spins again and continues to do so during cleavage. These filaments branch and anatomose ; they may bend suddenly at the base and even bend over at right angles at some point in their course ; they may start from the surface of the egg at various angles even tangentially ; they may run out and attach themselves to the egg membrane.

When cleavage of the egg begins, the spinnings show peculiar activity near the plane where the cells will separate. As the cleavage furrow is formed threads spin from one side to the other so that the two cells are connected by cross filaments as fast as they are separated by the plane of cleavage. The liquid between the cells is crossed by many most delicate strands and skeins of filaments that connect the two cells.

When the two cells subsequently approach and flatten against oneanother the connecting strands shorten and thicken as if contracting to draw the cells together. When pressure is applied to such cells the connecting threads appear as if resisting separation of the cells and as if more active in drawing them together.

Later when more cells are formed the same phenomena are seen and when the cleavage cavity is present it is crossed by a network of interlaced filaments spun out from the inner ends of the cells. These filaments connect adjacent cells and also the most remote cells of the blastula.

When the blastula is ready to swim, the external spinnings cease for a while and then start again as numerous processes from the general pellicle all becoming very long and active as the well known " cilia " that propel the blastula through the water.

In the gastrula stage both entoderm cells and ectoderm cells spin filaments that cross the blastocœle and connect all the cells. When the mesenchyme cells are formed they too spin many filaments that connect with the other cells and with other filaments so that the blastocœle is traversed by a very complex network of anastomosing filaments arising from all the germ layers. These internal spinnings remain active up to the time of formation of the proctodæum, at least.

The polar bodies spin, from the first, very fine pseudopodial filaments that soon unite with the egg and with the egg membrane as well as with filaments from the egg so that the polar bodies are henceforth (up to the period of the late gastrula, at least) united to the egg, and to the resulting cells, by threads of living material.

The shape of the polar bodies may be changed as if distorted by contraction of these filaments; and change of place of the polar bodies seems also to be due, at times, to contraction of the filaments.

In the anastomosing network that connects the egg with the polar bodies material is carried hither and thither in the currents that flow along the threads.

Eventually the polar bodies may be taken in to the blastula, through the cleavage pore, and henceforth be connected with the network spun out from the inner ends of the blastula cells and, later, with the filaments from the entoderm cells of the gastrula also.

The natural criticism that these spinning phenomena are abnormal, pathological, and hence of less wide interest, is met by the author with the statement that every precaution was taken to maintain normal conditions and that the eggs described were from lots that formed normal larvæ, or even themselves grew into normal larvæ after the observations. Moreover it is granted that heat, polyspermy, immaturity of the egg and adverse states of the water resulted in very profuse spinning phenomena, but these truly pathological phenomena were very different in character and easily distinguished from the less obvious phenomena believed to be undoubtedly normal.

It is thus claimed that in these normal Echinoderm eggs the protoplasm can project delicate living filaments. That these are concerned in the formation of the egg membrane. That they connect the cells during cleavage and gastrulation so that *the protoplasm is continuous throughout the larva and not separated by the cell walls.*

As appearances indicate that these connecting filaments are contractile and that they aid in drawing the cells together, they may thus prove to be the basis of the so-called "cyto-tropic" movements exhibited by the blastomeres of various eggs.

Moreover as these filaments are living bands and as material passes along them from one cell to another, the author thinks they may prove to be the means of that coordinating communication in the cell-aggregate postulated by certain workers in the field of experimental embryology.

The polar bodies are said to spin like the cells of the egg for a long time after their formation and to remain so long in protoplasmic continuity with the other cells that there is a possibility they may not be entirely without a place in the developmental changes.

The peculiar activities of the protoplasm of these eggs together with many general questions connected with such phenomena will be considered in a second paper, now in press.

Though these remarkable phenomena are new to our knowledge of eggs the reviewer would suggest that what is here seen as living filaments may have appeared to other observers as a protoplasmic envelope on the outside of the egg. Thus it may be that the very thick covering "*Protoplasma mantel*" figured and described by Selenka[3] in the Ophuirid *Ophioglypha lacertosa* and the much thinner "*Protoplasma schicht*" in the Echinid *Strongylocentrotus lividus*, which also enters the cleavage cavity, are really a collection of spinnings, possibly somewhat pathological. In the last named case this outer envelope of the egg has recently been emphasized by Hammar[4] as a connection between the cells.

PHYSIOLOGY.

The action of the venom of the Australian Black Snake.—From numerous experiments detailed in a lengthy paper in the Journal and Proceedings of the Royal Society of New South Wales[1] C. J. Martin concludes briefly that the venom of the Australian black snake (*Pseudechis porphyriacus*) is comprehensive in its action, but affects principally the three most vulnerable points of the higher organism, namely, the blood, heart, and the respiratory center in the medulla. Its method of destroying life depends essentially upon the concentration with which the venom reaches the circulation. When the concentration reaches a certain limit, death may be almost instantaneous from a coagulation of the blood, thus ending circulation. If the concentration falls short of this the venom has the opposite effect of destroying the capacity of the blood to clot when shed. When this is the case any

[3] Studien über Ent. Hft. 2. Wiesbaden, 1883.

[4] Archiv. f. Mik. Anat. March, 1896.

[1] XXIX (1896), pp. 146–278.